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# ENGINEERING NEWS-RECORD

DECEMBER 16, 1948

25

Ralph A. Tudor — He urges a parallel San Francisco Bay crossing

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# THE CONSTRUCTION WEEK

**HIGH CORPORATE EARNINGS**—Critics of high corporate earnings, on the increase this past week, are being answered by an argument that is of vital concern to the construction industry. With plant replacement costs 50 to 100 percent above original costs, depreciation reserves need to be increased if needed industrial building is to be assured in the future. Many companies are increasing these reserves because their earnings permit it, but cannot continue the practice if wages and salaries increase out of proportion or if earnings are taxed away.

**BAD FILL MAKES GOOD PROMOTION**—A fill operation on one of the beaches at Palm Beach, Fla., is proving a potent reminder of need for proper sewage disposal. Sand pumped in from Lake Worth is coated with a black material that emits a foul odor, and is said to come from sludge banks resulting from raw and inadequately treated sewage from lake communities. With a big stretch of beach already condemned for swimming, and a fine stench overhanging the area, public opinion has been roused to consideration of treatment facilities, and possibly a sanitary district to build them.

**BASING POINT RESULT?**—General Motors will locate two new Fisher Body plants in the Pittsburgh area. Freight-saving is claimed not to have been a factor, since any location within a 250-mi. radius of Detroit would have given about the same overall average for freight charges to G.M.'s widely-scattered assembly plants. Better insurance of steel supplies must, however, have influenced choice of a location where the neighbors are steel producers. The question is whether the location would have been chosen if multiple basing point pricing had not been outlawed. The consequence is to increase industry in an area where military authorities say concentration is already too great; where city planners and traffic and housing experts are already loaded down with problems.

**CLOSED SHOP AGAIN**—The surge of sentiment against the closed shop appeared to be turning back this week. It reached a height during 1946-47 when a dozen states either banned or restricted the closed shop, and the Taft-Hartley labor law was passed permitting lesser forms of compulsory union membership but banning the closed shop. Now, Secretary of Labor Maurice J. Tobin has declared that the closed shop must be restored in any new law to be substituted for the T-H by the new Congress. In Massachusetts and New Mexico voters rejected closed shop bans in the November 2 elections, but in Arizona voters approved an enabling act to back up that state's anti-closed shop constitutional amendment.

**WARTIME CONTROLS STIFFER**—In case of war—or the imminence of war—controls on construction and construction materials will be drastic. Manufacturers are privately being told by federal authorities to keep a record of the whereabouts of major items of equipment and material delivered but not installed. In case of emergency, this uninstalled material will be frozen or commandeered if not put to essential use. The fact that the government is trying to keep track of it is significant.

**CHOKING SUBURBS**—Suburban and neighborhood shopping areas that are developing rapidly because of downtown congestion, are now getting a dose of the same medicine. Ralph Dorsey, traffic engineer for Los Angeles, points out that some suburban areas are now more congested than downtown—because of poor planning and the tremendous increase in California's auto registrations, now topping 4,000,000.

**THREATENED OPPOSITION**—Any move to remove the civil works program from the Corps of Engineers and place it in a newly created agency, recommended by the Hoover Commission, will be fought by the Mississippi Valley Flood Control Association. Meeting in New Orleans for its thirteenth annual session, the association went on record opposing transfer of any civil works projects from army engineers, went on record against regional authorities or valley authorities, asked congressional appropriations of $100,000,000 a year for continuous work on flood control.

**HILLS VS PRAIRIES**—New England's hills are better protection than the Midwest's prairies against the atom bomb, according to H. R. Pomeroy, director of the Westchester (N. Y.) planning board. Addressing a meeting of planning officials at Hartford, Conn., he took issue with the National Resources Planning Board's recent statement that space was the best protection against effects of the bomb. Nagasaki, where the bomb's effect was screened by surrounding hills, is the best example of the fallacy of the NSRB argument, Mr. Pomeroy says.

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## Not a Policeman's Job

ATTEMPTS OF NEW YORK CITY to improve the appearance of littered streets and garbage-strewn lots in congested areas by exercise of police power point up an important concept for all who are concerned with sanitation improvements. Despite the issuance of thousands of summonses to those violating the sanitary code, city officials despairingly admit that little improvement has resulted. This experience in not unique. Stream-pollution abatement is a case in point. Hardly a state in the nation has not had some legal grounds for curbing pollution. But over the years this did not prevent the fouling of our streams to the point where the situation became a national curse. Progress that is now being made in correcting this condition must in large measure be credited to a long period of public education and development of support for clean-up programs. Whether it be a dirty stream or a dirty street, the principle of approach to the problem is still the same. People must be taught to think differently before they can be expected to act differently. Admittedly, this educational process takes time. But in the long run, the results are more effective than those attempted through legal means alone. Promotion of better sanitation is not a policeman's job.

## Legalize Escalator Clauses

PRICE PROTECTION PROVISIONS, commonly called escalator clauses, are more frequently used in contracts for private than for public work. When the reason for this resides in prohibitions in laws prescribing governmental buying procedures, some statutory modernization is in order. Too often these old laws were drawn with the idea that an escalator clause was an advantage that the bidder was not entitled to, and that it would cost the taxpayer money. Experience has not supported these contentions. When costs are going up or are unstable, the bidder provides his own protection by adding contingency items that often total more than the amount that prices subsequently rise. Or if they prove insufficient, the bidder may attempt to skimp the job, or he may have to give it up before completion. In all these cases it is the buyer as well as the bidder who needs protection, and escalator clauses will usually provide it. For more than a year in its contracts involving equipment that takes a long time to fabricate—pumps, turbines and the like—the Bureau of Reclamation has included an escalation clause. Recently Akron, Ohio asked for bids on a pumping station under a contract that will allow the final payments to depart from the bid prices by as much as 20 percent in accordance with a formula related to the ENR Building Cost Index. All bids in times of price uncertainty tend to be high bids. Escalator provisions tend to make them fairer to buyer and seller alike, benefiting the one if prices fall, the other if prices rise. All public bodies should be allowed to use them when the occasion warrants, and laws should be revised when necessary to make this possible.

## Overlapping Authority

BUILDING REGULATIONS are tending to be too complex and conflicting for the average citizen to cope with. The head of the building and safety department of a large western city recently found overlapping authority between his department and state agencies in eighteen classifications ranging from licensing of contractors to operation of mausoleums. He also found that delay, expense or discouragement frequently resulted from the need for multiple clearance of building plans. The real victims of these conflicting regulations are, of course, not city officials but private citizens who eventually vent their feelings by not building at all. Another likely consequence is that they pay their taxes more and more grudgingly, a highly undesirable situation on several counts. As cities grow in size, and greater importance attaches to speeding up the tempo in building construction, administrative and technical capacity is developed in municipal organizations, and they become well able to take over details that were formerly functions of state governments. Wise state officials will see the inevitable reaction to unnecessary remote control and will themselves take the initiative in urging transfer of detailed responsibility to local agencies. Necessary overall standards and requirements need not be disturbed by this allocation of duties. Wherever cities are properly organized and have competent personnel, ways should be found to give their building department officials more final authority.

# NEWS BRIEFS

**Dams**—Groundbreaking ceremonies were held late last month for the $27,000,000 Garza-Little Elm Reservoir on the Little Elm Fork of the Trinity River near LEWISVILLE, TEX. T. C. Cage and Dean Skinner, of Austin, Texas, hold the contract for land clearance . . . Corps of Engineers' approval has been given to Tuttle Creek Dam, which would be located on the Blue River, near TOPEKA, KAN., and would cost an estimated $58,459,000. . . . Low bid on the Bureau of Reclamation Dickinson Dam on the Heart River in NORTH DAKOTA was submitted by Adler Construction Co., of Madras, Ore., and totaled $1,034,000. . . . A syndicate of four construction companies, headed by Brown & Root, Inc., of Houston, Texas, is low bidder at $12,941,000 on the Bureau of Reclamation Canyon Ferry dam on the Missouri River, 17 miles east of HELENA, MONT.

**Housing**—Rosoff Bros., Inc. will build a $3,500,000 apartment development in HADDON TOWNSHIP, N. J. . . . Robert M. Jayne of Croydon, Pa., will build a $4,000,000 residential development in BRISTOL TOWNSHIP, PA. . . . SAN DIEGO, CALIF., has received recommendations for commercial development of the $16,000,000 Mission Bay project which call for early construction of motels and trailer courts. . . . A new $300,000,000 MASSACHUSETTS housing program for veterans, under which the state would enter the construction business to relieve the shortage of dwellings, was recently proposed to supplement the 1948 veterans' housing law which pledges the state's credit up to $200,000,000 on bonds issued by local housing boards. . . . With 1,000 houses already under construction, General Electric Co. has announced it will construct 500 additional units at RICHLAND, WASH., for workers on the Hanford Project. . . . Corbetta Construction Co., Inc. was low bidder on foundations for Dyckman Houses in NEW YORK CITY, submitting a base bid that amounted to $1,336,000.

**Water and Sewers**—SAVANNAH, GA. has just completed a new $4,800,000 industrial and domestic water supply system on the Savannah River. The large filtration plant has a capacity of 40 mgd. . . . As a result of the Federal Works Agency's advance planning program for local public works, the states of WASHINGTON and IDAHO have 36 sewage disposal projects ready to go. Total cost of the projects is estimated at $8,600,000. . . . The ALASKA Health Department has begun an engineering survey of water systems in 30 communities. Surveys are being conducted by the Victor C. Rivers engineering firm of Anchorage, and plans will be made available to the communities. . . . JACKSONVILLE, FLA., voters have approved the spending of $5,000,000 for extensions and rehabilitations of the city water system.

**Public Construction**—PHILADELPHIA, PA., has plans completed for a $1,000,000 Frankford Creek flood control project . . . Plans have been drawn by Bline, Hall & Kieran, Gary, Ind., for a $2,500,000 building to house the Indiana Dept. of Conservation and an historical museum in Indianapolis.

**Industrial Construction**—The Norfolk and Western Railway has a list of six improvement projects along its lines to cost more than $3,000,000 . . . Steel work is well under way for the American Foundry Co.'s INDIANAPOLIS, IND., plant to cost about $2,500,000 . . . Work is progressing on G.E.'s $18,000,000 research laboratory at PITTSFIELD, MASS. . . . Electric Reduction Co. of BUCKINGHAM, QUE., proposes a $2,000,000 extension of its plant in the next two years . . . Weingarten's, a supermarket chain at HOUSTON, TEX., has announced a $8,500,000 expansion of its markets in the Texas gulf coast area . . . Gulf Oil Co. will spend $40,000,000 to expand its plants in PHILADELPHIA, PA. . . . Western Electric Co. has a $9,000,000 steam power plant under construction on the CONNECTICUT River . . . The contract for substructure concrete work and general building construction of the Tanner Creek power plant of the Indiana & Michigan Electric Co. near LAWRENCEBURG, IND., has been awarded to George F. Hazlewood Co., Cumberland, Md., at about $2,000,000 . . . The 1,500,000-bushel $3,000,000 soybean storage elevator under construction for the Glidden Co. in INDIANAPOLIS, IND., is nearing completion. The contractor, Chris. Jensen Co. of St. Paul, Minn., is using the continuous concrete pouring process on a 24-hr. schedule, wherein the 4 ft. high forms are raised one-fourth inch every three minutes.

**Correction**—General supervision of the Susquehanna River Bridge under construction at WILKES BARRE, PA., as well as the construction of cofferdams and piers was performed by James E. Minnich, Inc. This fact was omitted in a picture caption on p. 40 of the Nov. 25 issue.

## Departments


| | |
|---|---|
| Foreign Developments | 9 |
| Municipal Affairs | 12 |
| Men and Jobs | 16 |
| New Products | 18 |
| Construction Reports | 22 |
| Construction Business | 40 |


## The Cover

Almost half of Ralph Tudor's professional career has been spent in planning, building or operating bridges across San Francisco Bay. It was no surprise to engineers when he was called upon as the man best fitted to direct planning and construction of the proposed second bay crossing (see p. 14 this issue).

He first began studying ways to bridge the bay in 1929, when he was assigned to work on the existing bay crossing—then in its planning stages. In 1936, having worked with the project to completion of construction, he was selected to set up its first operation.

A native of Colorado Springs, Colo., who passed his boyhood in Oregon, Ralph Tudor took his last step toward a career in civil engineering by entering the U. S. Military Academy at West Point, from which he graduated in 1923. Armed with an engineering degree obtained later from Cornell University, he returned to the Army for five years during which he did many things, little of which was related to engineering, however.

He left the Army in 1929, in search of engineering work, and got it on the bay crossing. In 1937 he accepted the post of administrative assistant to the head of the California Commission of the Golden Gate International Exposition. Serving also as a lieutenant-colonel in the National Guard, he was called into active duty in 1941, remaining in service in district engineer posts until 1945.

Mr. Tudor then became a vice-president of Morison-Knudsen International Co. During the year and a half in this capacity, his engineering and organizing skill were coupled with diplomacy in handling a study of the railroads and harbors of China. He resigned in May, 1947, to enter a partnership with Clarence A. Seage. This firm continues its consulting engineering work, although Mr. Tudor's major assignment since January, 1948 has been as head of the division in the California Highway Department named to investigate the second bay crossing.

Soft-spoken, even-tempered, Tudor makes a hobby of his Palo Alto home, where horseback riding, gardening and color photography are his relaxations.

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# Thrifty road rehabilitation seen key to highway problem

## *Highway Research Board members are told that the expedient of resurfacing old pavements must be widely used if current road needs are to be met*

Economical means for adding to the service life of existing highways are as important today as proper methods for building new highways, according to speakers at opening sessions of the Highway Research Board meeting held in Washington, Dec. 7-10.

The only way to preserve the usefulness of the present highway system, said C. Owen Beckley of the Pennsylvania Highway Department, is by rehabilitation. It is not physically possible to reconstruct pavements that actually should be replaced at a rate that will offset the loss of service life under current traffic, he pointed out.

Widespread interest also was expressed at the meeting in the preliminary report of a comprehensive study of economics of motor vehicle size and weight that was begun under the auspices of the Highway Research Board during the current year. This pilot study is concerned with a determination of comparative costs of operating trucks of different size and weight over roughly parallel sections of the Pennsylvania Turnpike and U. S. Routes 30 and 11. Studies of such matters as the relation between truck weight and pavement cost are to follow.

Other subjects considered at the meeting ranged from thermal conductivity of soils in pavement bases to night visibility on highways. Notes on some of the sessions are given below; others will be reported in a subsequent issue.

### Salvaging costs are high

Rehabilitation of highways by resurfacing frequently will amount to one-half or two-thirds of the cost of reconstruction on heavily travelled roads, according to Mr. Beckley, but where funds are limited it may be the only way to keep a road in service. He stressed the importance of not delaying the start of such work too long. A delay of one year in starting work on a section of the William Penn Highway near Philadelphia, he said, added $5,000 per mile to the cost as compared to an adjoining section, due to rapid deterioration of the old surfacing.

One of the main advantages of resurfacing, in the opinion of W. H. Root, maintenance engineer of Iowa, is that it helps to keep the public satisfied. Other favorable factors cited were a reduction in the effect of frost action and a considerable extension of the useful life of an otherwise satisfactory highway.

Details of resurfacing work in Georgia, Nebraska and Maryland were given by W. F. Abercrombie, George F. Snatek and G. S. Rinehart. Mr. Abercrombie said that in a concrete resurfacing and widening job over an old pavement with expansion joints spaced 40 to 60 ft. apart, expansion joints were spaced 300 ft. apart for the full depth, the old slab being cut back 3 ft. on each side of the joint. Contraction joints were spaced 20 to 25 ft. apart. No cracks developed during the first year of service and Georgia is now considering eliminating contraction joints except at bridge ends.

On a resurfacing and widening of 25 miles of the 4-lane divided highway between Baltimore and Aberdeen, expansion joints are spaced 360 ft. with contraction joints 30 ft. apart and a dummy joint in the middle of each 30-ft. slab.

### New light on frost action

Additional information having a bearing on the difficult problem of protecting highways against damage due to frost was brought out in papers presented at the meeting. Increasing recognition is being given to the importance of thermal conductivity of soils, both in relation to frost action and pavement pumping. On this point, Miles S. Kersten, associate professor, University of Minnesota, reported that in an elaborate study of thermal conductivity it had been found that for moisture contents up to about six percent in sandy soils and 12 percent in fine-textured soils, the conductivity is lower below freezing than above. However, with further increases in moisture content, the conductivity of frozen soils becomes progressively greater than that of unfrozen soil.

That thermal conductivity has a direct relation to the movement of moisture up into the base was stated by A. T. Bleck, construction engineer, Wisconsin Highway Department. "When atmospheric temperatures are

(*Continued on p. 8*)

**HEATED-HIGHWAY INSTALLATION—Wrought iron pipe coils, carrying water heated in a hot-water well, will keep this steep stretch of road in Klamath Falls, Ore., clear of ice and snow this winter. Water and anti-freeze are to be pumped through coils in the 190-degree well and then circulated in the eight-inch pavement slab.**

# States decide on highway proposals

Proposals to amend constitutions as they affect highway financing were voted on in seven states last month. The canvass of votes is now sufficiently complete to permit a report of results.

An anti-diversion amendment in Massachusetts appears to have passed, although an official state count of the vote will not be completed until the middle of this month. Passage of the Massachusetts amendment increases to 21 the number of states that have anti-diversion provisions written in some form into their constitutions.

Missouri voted on an amendment to increase the gas tax 1½ cents a gallon. The amendment lost. Proceeds would have gone to the municipalities and counties, and these local governments then would have been prohibted from levying local gas taxes. According to a late count, the voters went 5 to 3 against.

A full count shows that in Louisiana an amendment to raise to 5½ cents the portion of the 9-cent gas tax earmarked for highway purposes was passed. This move put one-half of the cent now going to the state board of education in the highway fund; the education board will continue to get the other one-half cent.

Minnesota failed to cast enough votes to carry an amendment that would have divided gas tax revenue equally between state and counties. The state has been allotted and will continue to be allotted a two-thirds share.

Florida's anti-diversion amendment—a partial anti-diversion measure—lost by nearly three to one. Highway user groups were divided in support of this amendment. It applied only to the seventh cent of the gas tax, which now goes to education and the general fund, and its passage would have meant the freezing of other existing diversions such as license fees.

An amendment to authorize $50,000,000 in bonds for building secondary roads in West Virginia passed by a large margin. The legislature is empowered to levy an annual tax—with no limitation as to whether it be a general or highway user tax—to pay the interest and principal on bonds.

North Dakota voters apparently refused to repeal an intiative petition approved earlier this year that made parking meters illegal. Unofficial returns show a 7 to 6 vote against repeal.

The above information has been supplied by the National Highway Users Conference.

## MAJOR MEETINGS

**Materials Handling Exposition**, Convention Hall, Philadelphia, Pa., Jan. 10-14.

**American Society of Photogrammetry**, annual meeting, Shoreham Hotel, Washington, D. C., Jan. 12-14.

**Associated Equipment Distributors**, annual meeting, Stevens Hotel, Chicago, Ill., Jan. 16-20.

**American Society of Civil Engineers**, annual meeting, Hotel Commodore, New York, N. Y., Jan. 19-21.

**Canadian Construction Association**, Royal York Hotel, Toronto, Ont., Jan. 23-26.

**American Road Builders Association**, annual meeting, Willard, Mayflower and Statler Hotels, Washington, D. C., Feb. 7-9.

**National Ready Mixed Concrete Association**, 19th annual convention, Hotel New Yorker, New York, N. Y., week of Feb. 14.

**National Sand and Gravel Association**, 33d annual convention, Hotel New Yorker, New York, N. Y., week of Feb. 14.

**National Association of Home Builders**, annual convention and exposition, Stevens Hotel, Chicago, Ill., Feb. 20-24.

**American Concrete Institute**, 45th annual convention, Hotel Pennsylvania, New York, N. Y., Feb. 22-25.

**Associated General Contractors of America**, 30th annual national convention, Waldorf-Astoria Hotel, New York, N. Y., Feb. 27-March 3.

## HRB hears rehabilitation is road problem answer

(*Continued from p. 7*)

lower than those of the earth, conduction currents of heat rise through the soil in an effort to maintain temperature equilibrium. Due to the characteristics of molecular activity, moisture in molecular form will be carried along with these currents." Mr. Bleck went on to say that this moisture will accumulate under an impervious pavement regardless of the constitution of the sub-grade soils, and that it is possible for this moisture, upon freezing, to completely destroy the density of so-called stabilized aggregate bases that had been compacted to densities of the order of 140 lb. per cu. ft.

Mr. Bleck said that this adverse movement of moisture had been successfully checked in Wisconsin by installing a 6 to 24-in. layer of free-draining sand or sand-gravel from ditch to ditch. This design also prevents the formation of slurry directly under the pavement due to rolling loads on the pavement, which ultimately results in pumping joints.

Exception was taken to this proposal by Prof. K. B. Woods of Purdue University, who said that unless this free-draining base material has a certain amount of binder it will move under the moving loads of traffic, resulting in displacement and cracking of concrete pavements. This view was supported by Charles M. Noble, state highway engineer of New Jersey, who said that New Jersey has found that sand shifts under heavy traffic unless it contains a binder.

### Frost study

Seven states are cooperating in a program of research into the extent to which frost damages highways, according to C. L. Motl, maintenance engineer, Minnesota Highway Department, who is chairman of the committee in charge of the study. Both plate bearing tests on surfaces and bases and penetrometer tests are being made, and it is hoped that the results can be correlated so that the probable effect of frost can be determined without resort to the expense of load tests.

Mr. Motl said that in his state, field bearing tests have shown that all soils lose strength when thawing and make a slow recovery to normal capacity during subsequent weeks. (Details of these tests were given in ENR Dec. 9, p. 88).

T. E. Shelburne said that a study made in Virginia indicates certain combinations of climatic conditions have an important bearing on the seriousness of spring break-up. Low temperatures preceded by high precipitation is the worst combination. This indication of a considerable seasonal variation in moisture content of the base and subgrade checked with findings in North Carolina reported by L. D. Hicks. The North Carolina studies showed that seasonal variations are such as to call for recognition in design and maintenance.

### Soil compaction studies

Studies of field compaction of soils made by the staff of the Waterways Experiment Station at Vicksburg, Miss., indicate the need for further study of compaction equipment, especially sheepsfoot rollers, is the opinion of W. J. Turnbull. Not enough attention is being given to the relation between the bearing capacity of the soil being compacted and the end area of the feet. If the combination of weight and foot area is such as to produce a unit load in excess of the bearing capacity of the soil, the soil will shear and proper compaction will not be obtained. Much has yet to learned, he said, as to proper foot area, shank length and shank spacing for different types of soil. Depth of the layers in which the soil is spread is very important, Mr. Turnbull added.

# FOREIGN DEVELOPMENTS

**India**—Within a year after gaining independence, the government of India has launched more than a dozen river valley projects. Construction has started on one, and others are being designed.

Three groups of Indian engineers—numbering 24 in all—are now in the United States visiting American projects and working on plans for their own multi-purpose developments in cooperation with the International Engineering Co. of San Francisco.

Work has begun on the large Damodar Valley project. Originally scheduled for ten years, it now is hoped that construction will be completed in five. The Damodar Valley development will irrigate about 763,800 acres in the provinces of Bihar and West Bengal and supply 2,000,000 kw. of hydroelectric power, in addition to 1,050,000 kw. of thermal power. Cost of the project is estimated at nearly $165 million (ENR Aug. 12, p. 4).

Indian engineers at present in the United States are engaged on three other large multi-purpose projects. Farthest advanced of these is the Ramapadasagar project. Two years ago the province of Madras sent engineers to this country to work on the preliminary design.

Soon after their return to India some six months ago, the province dispatched another group of nine, led by U. Ananda Rao, superintending engineer, to visit TVA, Bureau of Reclamation and Corps of Engineers projects.

Extensive irrigation development and incidental power generation are involved in the Ramapadasagar project, estimated to cost $257 million and to take twelve years to complete. A reservoir to store 15.6 million acre-ft. on the Godavari River calls for a dam 1½ miles long and 428 ft. high, with the deepest foundations 190 ft. below riverbed.

To speed the design of another project, eight engineers from East Punjab arrived in the United States in October. M. R. Chopra heads the party as superintending engineer, working on plans with the International Engineering Co. for the Bhakra Dam, principal feature of a development to cost $209 million. The dam, in a gorge of the Sutlej River at Bhakra, will be 480 ft. high and will store 3.5 million acre-ft., sufficient for a mean discharge of 6,600 cfs. during the 270 days of the dry season.

Seven engineers—the third group now in the United States—are making studies and preparing designs for Rihand Dam on the river of the same name in the Mirzapur district.

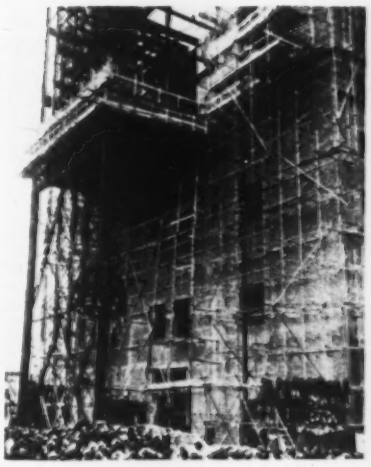
The Rihand Dam, a masonry structure 280 ft. high, is to impound 80.87 million acre-ft. Water from this reservoir will bring 4 million acres under irrigation.

## Structural engineering

**Belgium**—At the September meeting in Ghent of the International Association of Bridge and Structural Engineers (ENR Nov. 4, p. 6) about 20 engineers and contractors from 10 countries laid the groundwork for the formation of an International Association for Prestressed Concrete.

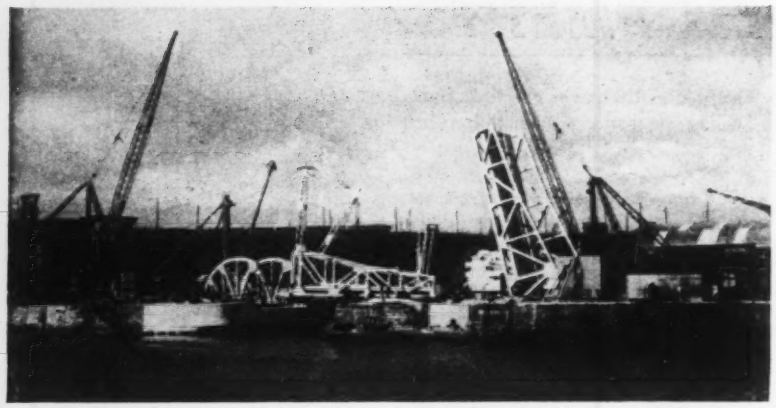
Professor Gustave Magnel, consulting engineer and professor of engineering at the University of Ghent, presided over the meeting and was elected temporary president. The vice-presidents, who will work with Dr. Magnel as a committee to draft the rules to govern the organization, are: F. Webster, chief development engineer for the British Ministry of Works; Curzon Dobell, vice-president and general manager, Preload Enterprises, Inc., New York City; Ulf Bjuggren, director of the Ste. Betongindustri, Stockholm, Sweden; and C. Mallet, chief engineer of the Department of Colonization and Hydraulic Works, Algiers.

Among the matters which will be considered by this committee are the publication of an international journal on prestressed concrete construction, the organization of biennial congresses and the initiation of original research work in connection with prestressed reinforced concrete design and construction. The committee's recommendations on these and other matters will be presented at a constitutive assembly of the new organization to be held in Algiers in September, 1949.



**WREATH-RAISING CEREMONY in Berlin indicates that the roof is completed on "Power Station West" in the British Sector. Completely stripped by the Russians, the badly needed source of electricity was rebuilt by German workers. (Acme Photo)**

**ERP EXHIBIT—Italian Premier De Gasperi (right) and James C. Dunn, U. S. Ambassador to Italy (pointing), examine a housing project model at a recent European Recovery Program exposition in Rome. (Wide World Photo)**



# Aluminum-alloy bascule bridge opened in Sunderland, England—first in world

The world's first aluminum-alloy bascule bridge was put in operation at Sunderland, England, last month. One of the first completed facilities in an 8-year improvement program of the River Wear Commissioners (port authority for the port of Sunderland), the bridge is a double-leaf bascule, 121 ft. c. to c. of trunnions. It carries a single-track railway line, a 9-ft. roadway, and two 4 ft. 9 in. sidewalks between the trusses, which are 14 ft. 9 in. c to c.

Because of the use of aluminum, weight of the Sunderland bridge is said to be only about 40 percent of an equivalent steel structure.

The bascule leaves were fabricated by Head, Wrightson & Co. at Thornaby-on-Tees, about 30 miles down the coast, and barged to the site for erection.

### Design details

The bridge is designed to carry a maximum railway load of 70 tons on two axles or a train of 15-ton axle loads at 10 ft. centers. The sidewalks were designed for a load of 56 lb. per sq. ft.

Altogether some 17 tons of plates and 34½ tons of extruded sections were required. The aluminum alloy used has an ultimate tensile strength of 50,000 psi. which has a proof of about 30,000 psi. The largest plate size was 18 ft. 6 in. x 3 ft. x ½ in., while one of the larger extruded sections was a 12-in. 12.79 lb. channel.

Upper and lower chords are composed of two channels and batter plates. Vertical and diagonal members are of I-section built up from plate and angles. Longitudinal plate girders 2 ft. deep run the full length of each leaf directly below the rails. Cross girders, beneath the longitudinal girders, are spaced at 13-ft. centers and are approximately 3 ft. deep. Roadway flooring consists of aluminum alloy plates on longitudinal channel beams, and the surfacing is asphalt, bonded to the plating by expanded metal.

Primary responsibility for the design and execution of the project was in the hands of W. H. S. Tripp, engineer for the River Wear Commissioners. Designer of the superstructure of the bridge was F. J. Walker, of Head, Wrightson & Co., with D. V. Pike, structural engineer of the Aluminum Development Association, being consulted on the choice of alloys.

## Improvements planned for Alaska Railroad

Further work on modernization of the Alaska Railroad is to be undertaken in 1949, according to R. A. Sharpod, chief engineer. This 492-mile railway from the ports of Seward and Anchorage on the coast to Fairbanks in the interior is owned by the United States government and is operated by The Alaska Railroad, a subdivision of the Department of the Interior.

The proposed work will be a continuation of work begun in 1948. In general it consists of widening the subgrade from its original 16-ft. width to a normal width of 20 ft., the elimination of sags existing since the time of original construction, some curve reduction work, the operation of gravel pits, the hauling and placing of ballast, replacing 70-lb. rail with 115-lb. rail, replacement of existing No. 9 switches with No. 11 switches, replacement of ties and surfacing of track.

The modernization work under the 1948 program is being carried out by the contracting firms of William A. Smith Co., Morrison-Knudsen Co., M. P. Munter Co. and a combination of C. F. Lytle and the Greene Co.

An invitation to bid on the 1949 work, which will consist of about 184 miles of the widening work and the relaying of about 40 miles of rail, has been sent to 22 general contractors in the United States.

**LEAF GOES ALOFT during erection. Builders claim a 60 percent weight saving in use of aluminum instead of steel in the bascule leaves.**

## Group to fight for freight absorption

Carrying on the fight for legislation on freight absorption, 20 businessmen from as many cities met in Pittsburgh last week to form a national competition committee. Forthcoming dissolution of the Capehart advisory council, after it hands in its report, and the need for education on f.o.b. pricing among businessmen led to the formation of the committee.

A recent survey in Pittsburgh, Chicago, Cleveland and Cincinnati revealed that leaders in the industries most affected by the Supreme Court's cement institute decision have small hope that the 81st Congress will pass legislation clarifying the question of freight absorption. The new committee will try to arouse interest and build up pressure in the home towns of businessmen and Congressmen throughout the nation.

Men attending the meeting will head local chapters to carry on the committee's work in their own cities. There won't be any paid staff except at national headquarters, which may be in Chicago rather than Pittsburgh.

Those at the meeting—including both producers and consumers in several different industries—had one thing in common: they have been hurt or will be hurt by a general movement to f.o.b. pricing. They want legitimate freight absorption—by steel or cement producer, fabricator, or any other manufacturer—free from any taint of illegality. But they are emphatic on this proviso—they want no legalizing of collusion or of anything that could pass for it.

The idea for a continuing voluntary committee to take the place of the Capehart advisory council got its start in three or four exploratory meetings in Pittsburgh of executives from steel, cement, chemical and other affected industries. The local chamber of commerce cooperated there and in other cities where groups are forming.

**GRAIN ELEVATOR MIGRATES — This 230-ton structure crosses an overpass of the Great Northern Railway en route from Hamar to Wimbledon, N. D., a distance of 63 miles. William Reese of Thief River Falls, Minn., handled the job in three days. (Wide World Photo)**

## Judge exempts designers from wage-hour law

The Fair Labor Standards Act and its wage-and-hour provisions do not apply to professional architects and their staff of specially trained employes, according to Judge W. Calvin Chesnut's recent ruling in Federal Court at Baltimore, Md.

Judge Chesnut made the ruling in connection with injunction proceedings filed by the wage and hour administrator against the architect-engineer firm of Turpin, Wachter & Associates of Baltimore.

William R. McComb, the administrator, sought an injunction restraining the defendants from refusing to pay the proper overtime compensation to their employes and from failing to keep adequate employment records. He contended that the defendants are engaged in the production of goods for commerce within the meaning of the act because their plans are mailed or sent to other states.

It also had been contended that the defendants were engaged in interstate commerce because they prepared plans for bridges over waterways, or for airport paving or for alterations and additions to buildings already being used for production of goods in interstate commerce.

The judge's ruling stated that the plans are prepared for a particular client, not for public sale, and the employes are "too remotely concerned" with interstate commerce to come within jurisdiction of the act.

## Lustron Corp. gets contract for 60 Quantico homes

The Lustron Corporation, producers of the porcelain-enameled all-steel prefabricated home, will erect 60 basementless bungalows at Quantico, Va., under terms of a $599,379 contract awarded Dec. 3, by the Navy's Bureau of Yards and Docks. Units will house families of married officers and enlisted men at the Marine Corps School.

The government contract attracted inquiries from 25 prefab firms, but only seven entered bids. It was the first time a manufacturer of steel homes had bid against conventional prefab firms on a government contract.

Lustron units measuring 1,066 sq. ft. per three-bedroom house and 891 sq. ft. per two-bedroom house, totaled 58,710 sq. ft. of usable area for 60 homes, representing a cost of $10.21 per sq. ft.

Lowest bid on a dollar basis was submitted by Home Building Corporation, of Sedalia, Mo. at $499,540, followed by John A. Johnson, Inc., of Brooklyn, N. Y., who bid $508,500, and Green Lumber Co., Laurel, Miss., $512,000.

## Supply bureau now to buy U. S. construction tools

Theoretical advantages of centralized purchasing are getting a severe test under a federal government order that took effect last month. The order puts all buying of construction equipment for federal departments—except the national military establishment and the Economic Cooperation Administration—in the hands of the Bureau of Federal Supply.

Government agencies such as the Bureau of Reclamation, accustomed to selecting and ordering machines to meet their own needs, look upon the new arrangement as an impractical extension of a good theory.

The new regulation applies to a list of nineteen items—from asphalt mixers to well-drilling machines.

According to the system now in effect, the Bureau of Federal Supply accumulates for periods of two months all purchase orders for equipment in these classifications. Purchase orders from the departments and establishments, complete as to specifications and details, must be submitted to the bureau for consolidation of requirements.

At the end of each of these periods, the bureau will issue invitations to bid.

## Narrows bridge hearing set for Jan. 12 in N. Y.

A public hearing will be held Jan. 12 in New York's City Hall on the proposed bridge across the Narrows between Staten Island and Brooklyn (ENR July 29, p. 8).

The Triborough Bridge and Tunnel Authority has applied for Department of the Army approval of the bridge location and plans, and a joint Army-Navy-Air Force board will conduct the hearing. Interested parties are invited.

The proposed crossing would be a suspension structure with a 4,620-ft. main span. Vertical clearance at the piers would be 180 ft. above mean high water; at mid-span it would be 237 ft.

# MUNICIPAL AFFAIRS

## Urge Private Philadelphia Water System

A proposal calling for private operation of the water system of Philadelphia, Pa., is included in an engineering report to the Committee of Fifteen by Charles Haydock, a consulting engineer.

Mr. Haydock says the city should give up operating its water system and should turn it over to a private enterprise under lease, an arrangement like that under which the city-owned gas works is now operated by the Philadelphia Gas Works Co. Or, failing that, the system should be placed under the authority type of management like the Delaware River Bridge's administration by the Delaware River Joint Commission.

Mr. Haydock found four principal failings in the present operation:

Insufficient maintenance; intermingling of water revenues with those of other city agencies; inadequate personnel; and the fact that fully one-half of the 475,000 users are without meters, which are the "cash registers" of the system.

Although Philadelphia was one of the first cities in the country to have a complete system of water supply, it has often had difficulties, especially as to water quality.

## Anti-Pollution Efforts

Although the Seattle, Wash., city engineering department has expressed its "hearty accord" with a report by Abel Wolman (ENR, Dec 2, p. 12) on the city's sewage disposal problem, the State Pollution Control Commission declares the report "falls far short of any final disposition of the problem."

"If the Wolman report were to be accepted by larger cities generally," the commission said, "then pollution abatement would come to a halt along the entire Pacific slope, and the cities of Los Angeles, San Francisco and Portland would not be making the frantic efforts as at present to solve a realistic problem which does exist."

Dr. Wolman found that the salt waters of Puget Sound, bounding the city on the west, are sufficient to assimilate the city's sewage without elaborate treatment plants which the state has contended are necessary.

In accordance with Dr. Wolman's recommendations, a master plan for sewer systems and sewage disposal for Seattle and its area is being worked out by city and King County engineers, according to City Engineer R. W. Finke.

The U. S. Public Health Service has set up a Portland, Ore., office to prepare for a long-range program, in cooperation with Northwest states, to eliminate pollution in the Columbia River and its tributaries. Robert H. Harris, senior sanitary engineer of the federal service, will have charge. The first step will be the creation of a board of engineers composed of sanitary and health department representatives of the states involved.

At Richmond, Va., Whitman, Requardt and Associates, Baltimore, Md., will be employed to make a study of Richmond's pollution of the James River.

**BRIDGE WITHOUT A RIVER—Superstructure of $2,000,000 Liberty Bend Bridge northeast of Kansas City, Mo., was completed last month. Next spring a 6½-mile bend in the Missouri River will be straightened out to flow beneath the bridge, which carries U. S. 71 on a by-pass around the city.**

It is reported that several million dollars will be required to eliminate pollution of the St. Clair River, Lake St. Clair, and the Detroit River in Canada. At a hearing before the International Joint Commission studying pollution of these waters, W. C. Nelson, Mayor of Sarnia, Ont., estimated that it would cost his community $1,500,000 to construct a sewage disposal system which would eliminate its share of the pollution. Sarnia's waste empties into the St. Clair River opposite Port Huron, Mich.

## Record N. Y. Budget

On Dec. 2 the Board of Estimate, New York City, adopted a 1949 capital outlay budget of $336,909,773—the largest in the city's history. Public hearings are scheduled for Dec. 13.

This budget, prepared and adopted by the City Planning Commission, constitutes a guide and program for permanent public improvements to be financed with borrowed money within the debt limit.

Of the total of $216,579,390 allotted within the debt limit, about 64.6 per cent was earmarked for the following departments: Education, $48,146,300 or 22.2 per cent; transportation, $47,240,546 or 21.8 per cent; hospitals, $27,622,500 or 12.8 percent; and sanitation, $16,854,853 or 7.8 per cent. The total for these four departments was $139,854,200.

## Better Street Lighting

Improved street lighting was given a large measure of credit when Los Angeles, Calif., scored a reduction of 94 traffic fatalities in 1947 as compared with the previous year.

At the recent business men's conference on urban problems in Detroit, officials of Oklahoma City and Wilmington, Del., reported that in their communities better street lighting had demonstrated its importance as a factor in improving traffic conditions.

Among other cities which have recently bettered their street lighting are Trenton, N. J., Sewickley, Pa., Ashtabula, Ohio, and Lansing, Mich. In the latter city 88 percent of the total street mileage is now equipped with boulevard lighting posts and modern lighting equipment.

## Chicago to Zone Sky

The American Society of Planning Officials reports that a study of Chicago air traffic is under way to insure that airplanes operating at one field do not "foul up" those operating at another. Zoning regulations for pilots flying on instruments will be set forth. Recom-

mendations will include layouts of flight paths for the two city airports as well as for the Navy's air base. To keep the number of planes within the limits that the Chicago airport's radio landing guides can handle without undue delay, it is said that it may be necessary to control flights from other cities to Chicago more carefully.

## Towns fight land taking

Small towns in the northwestern section of Connecticut are fighting against further taking of land by the Hartford Metropolitan Water District.

"The northwestern area is gravely threatened by the Metropolitan Water District," Edward Stansbury, member of the Allied Connecticut Towns executive committee, said recently.

The allied towns will attempt to prove that the district already has three times the water it needs. The group claims that the Metropolitan Water District can well take water from the Connecticut River, as it formerly did, to provide fire protection, and factory and street flushing service, rather than to use mountain water for those purposes at the expense of the state's homes and property rights.

The allied towns are particularly opposed to the building of another dam and reservoir on the west branch of the Farmington River.

## Traffic and Parking

Ever present traffic and parking difficulties continue to plague city officials. Here are some of the latest plans and developments in the effort to find solutions.

Mayor William O'Dwyer of New York City has proposed an amendment to the city charter establishing a traffic commission to grapple with the metropolis' expensive traffic chaos. The proposed law foreshadows the use of parking meters—yet untried in New York—and the setting up of a new traffic department.

A traffic survey of Springfield, Mass., will get under way next spring.

Immediate steps to install penny and nickel parking meters in Indianapolis, Ind., has been recommended by Mayor Al Feeney for the mile-square downtown area, and the city will ask the state assembly for a law to establish an Indianapolis Park Authority.

Baltimore, Md., is authorized to acquire land and to sell or lease it to private operators for public parking garages and facilities.

The highway traffic board of Philadelphia, Pa., has made public a list of 14 sites for construction of public garages under the board's $25,000,000 off-street parking program. The sites would provide space for 12,151 automobiles at one time, and with a daily turnover of 70 percent they could accommodate more than 20,000 cars in 24 hours.

In Chicago traffic tickets are made out in quadruplicate. The first copy is sent directly to the courts, thus by-passing any places where the ticket might be fixed. Second copies go to the police. The arresting officer keeps the third copy for his record, while the fourth copy is given to the offender as a memento as well as a reminder to appear in court. About 50 other cities are using similar "non-fix" traffic tickets, including Detroit, Denver, Los Angeles and San Francisco.

**GREAT WHITE WAY of Milwaukee is this Billy Mitchell Field runway as it appears to the incoming pilot at night. There are 38 Bartow lights, manufactured and installed by Line Material Co., at 200-ft. centers on either side of the 7,600-ft. runway. Each light develops up to 180,000 candlepower.**

## Municipal Briefs

Asheville, N. C., has engaged Charles T. Main of Baltimore, Md., for preliminary engineering work and plans for a dam on North Fork Creek, and a pipeline in connection with the estimated $2,500,000 water supply extension work.

Elwin G. Speyer, public works commissioner, Buffalo, N. Y., estimates the cost of a long-range rehabilitation program for city properties at $26,191,410.

On Nov. 22 the city council of Cincinnati, Ohio, adopted "The City Plan of Cincinnati," a master plan for community development.

O. J. Jorgensen, structural engineer, has been elected chairman of a 9-man committee to revise the building code of Miami, Fla.

Granville M. Read, chief engineer, E. I. du Pont de Nemours and Co.; James W. Hanson, Jr., chief engineer, Atlas Powder Co.; and Ernest S. Wilson, chief engineer, Hercules Powder Co., have been named by the Chamber of Commerce as an engineering committee to study plans for the proposed $7,000,000 sewage disposal system for Wilmington, Del.

At Louisville, Ky., an ordinance is being considered to appropriate $120,000 for an engineering survey on grade crossing elimination and centralization of railroad terminal facilities in that community.

Tucson and Phoenix, Ariz., have approved bond issues totalling $12,850,000 for municipal improvements of various kinds.

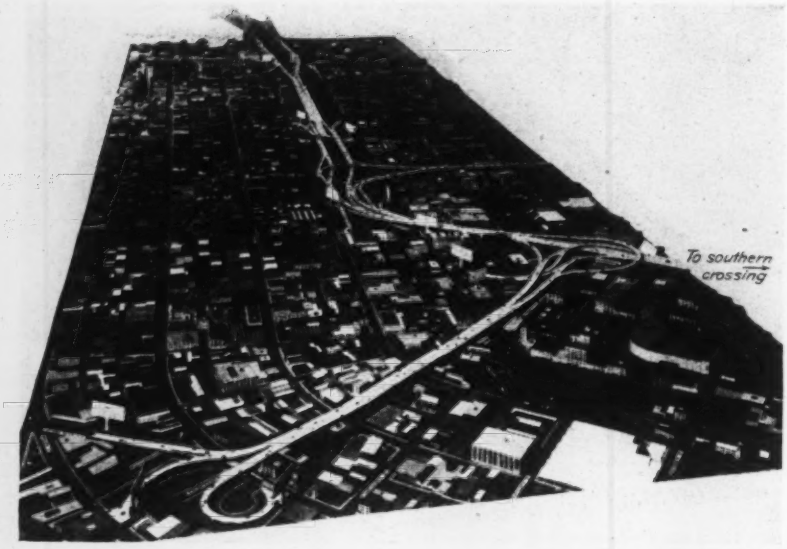
Moore and Owen, consulting engineers, Indianapolis, are developing a sanitary program for Muncie, Ind., and Carl R. Dortch, also of Indianapolis, is to make a written report on the financial plans.

A $10,000,000 loan may be sought by Montreal, Que., to bring its waterworks system more up-to-date. There is a plan to get water from the middle of the St. Lawrence River below the rapids, and not from the half-muddy water of the Ottawa River.

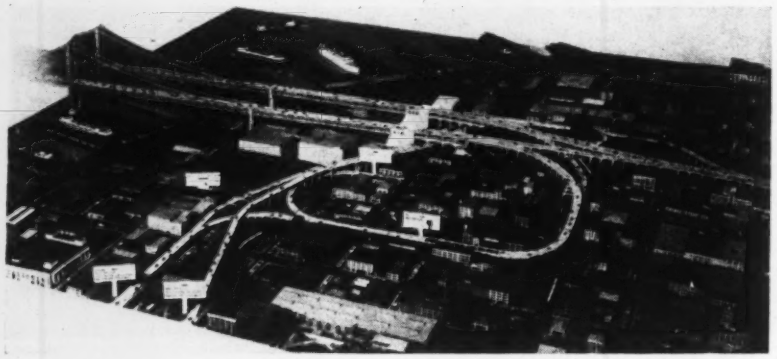
Army engineers will survey Big Walnut Creek for a possible dam to furnish Columbus, Ohio, with 35 mgd. of water.

As a result of the recent defeat of the proposed amendment to the payroll income tax ordinance of Toledo, Ohio, it is said that the city's public works program will be postponed for at least one year.

Longansport, Ind., has received a preliminary report by Boyd E. Phelps & Co., Michigan City, on a program for the rehabilitation of the city water and filtration plant, but city officials say the plan will have to be held in abeyance until costs come down.




## Scale models, such as this, help plan . . .



## ramps and interchanges for Bay Bridge

The layout of approach ramps and traffic interchanges is a noteworthy feature of the recently released studies for a new San Francisco Bay crossing (ENR Nov. 25, p. 39).

Effective solutions to unusual traffic handling problems have been proposed by engineers of the Bay Toll Crossings Division and the Division of Highways of the California Department of Public Works. Scale models of the critical areas helped the engineers to visualize their work and are also being used to put over the ideas to the Toll Bridge Authority and the general public.

This work was done in connection with preliminary studies made to help the California Toll Bridge Authority make a decision relative to a San Francisco Bay crossing. These studies included only preliminary designs. Detailed designs are to be made after a specific crossing is selected.

To aid in this work, four models on a scale of 1 in. = 50 ft. were made. These covered an area equivalent to about 2,000 acres and cost less than $15,000.

The largest of the models is 7 x 21 ft. and shows the San Francisco downtown area including the approaches to the existing bridge and the proposed "twin." Also shown is the contemplated Bayshore Freeway as it ties into the approach structures. The freeway is to be built as a separate project by the Division of Highways. Every building in this large area has been reproduced in solid wood models to exact scale with the aid of air photos and ground surveys. Engineers drawings were used for construction of ramp and freeway models.

Also shown on this large model is an interchange for a freeway leading to the proposed southern crossing. The section including this interchange is removable and a substitute section has been built to show the approach system without this interchange.

During construction of the models, the engineers were able to make some improvements. However, probably the most important use of the models was in demonstrating the proposed approach system to the Toll Bridge Authority and to the general public.

For example, two objections frequently raised against building a twin crossing as recommended are that (1) additional congestion would be caused on downtown San Francisco streets and (2) much valuable property would be taken off tax rolls and put to public use. Most observers have agreed that the fallacy of these objections is shown by a study of the model made of the extensive approach system to the twin crossings as it will tie into the Bayshore Freeway.

Upper deck auto traffic coming off the bridges can, according to the model, go to any one of five different points in downtown San Francisco. The existing ramps have only two discharge points for auto traffic. Upper deck auto traffic entering the bridges will have six entrances in contrast to the present two. Lower deck truck and bus traffic will have a separate entrance and exit in lieu of the present combined entrance and exit.

Also shown by the model is the exact amount of property required by the combination of freeway and bridge approach.

### Distribution structure improved

An improved traffic interchange is planned at the East Bay traffic distribution structure and is included on a second model. On the structure as it now stands, through traffic between Berkeley and downtown Oakland must weave across through traffic leaving the bridge to go to uptown Oakland. This structure will be improved by adding a third level viaduct-type roadway to it, which will permit bridge traffic to avoid weaving through traffic going in the same general direction but to a different destination.

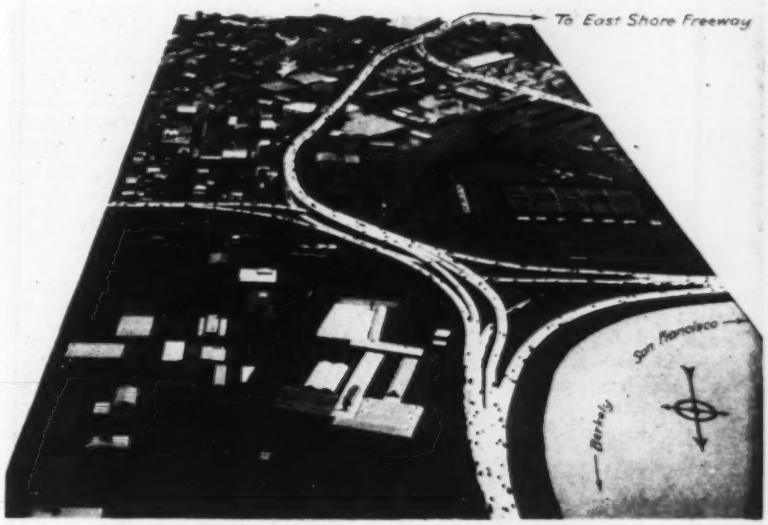
The weaving process is included, however, in a traffic rotary proposed for the San Francisco approach to the southern crossing and shown on model number three. In this case the main stream of traffic will not be required to use the rotary. Only local traffic traveling at relatively low speeds will use it and ample space is provided for them to move from one side to the other, as necessary.

A more direct approach is planned to aid twin-bridge traffic headed for Oak-

land and Alameda. This traffic will cross the Oakland Army Base by means of a skyway. Access to the base is provided by ramps in the center of the structure that slope down in each direction to the main Army Base road.

A fourth model was constructed showing the approach system in Oakland to tubes leading under the Oakland Estuary to the city of Alameda. This model was made to show two conditions by having removable sections. One tube is to be constructed when the parallel bridge is built, and twin tubes will be constructed when the southern crossing is built. Both situations can be shown by proper use of removable ramps.

The Bay Toll Crossings Division is part of the California Department of Public Works. C. H. Purcell is director of the department and Ralph A. Tudor is chief engineer of the division. Much of the interchange and model work was done under the direction of N. C. Raab, design engineer of bridges for the division, and B. W. Booker, district highway engineer.




**NEW PLANS call for a third structure to be built into the distribution system on the East Bay side of the bridge to remove the present necessity of weaving across high-speed traffic in a relatively short distance.**

## Redesign for flood control at Hungry Horse Dam

Better flood control is the object of an agreement to change the design for Montana's Hungry Horse Dam, R. J. Newell, regional director of the Bureau of Reclamation, reported.

The change was worked out by the bureau and the Corps of Engineers. New plans call for three instead of two outlet pipes, each 8 ft. in diameter. Also, a spillway with a maximum discharge capacity of 35,000 ft. per sec. will be constructed.

In view of last spring's floods, it was decided that the dam needed greater discharge capacity to empty the 3,500,000 acre-ft. reservoir in times of impending high water.

The additional outlet will have no effect on power generating capacity of the dam or on prospective irrigation in the Kalispell area. The $100 million structure is being built on the south fork of the Flathead River.

## Name committee to study Florida stream pollution

A thirteen-man committee, to be known as the State Coordinating Committee on Surface and Underground Water Pollution Prevention and Abatement was named in a final action at the recent First Annual Public Health Engineering Conference at the University of Florida.

The meeting was the third of a series on widely divergent engineering problems sponsored by the civil engineering department of the university.

Chairman of the new committee will be John E. Kiker, associate professor of public health engineering at the university. His group was instructed by the conference to gather and disseminate data and coordinate efforts of industry, engineers and public officials in a drive for abatement of pollution in Florida streams.

Other members of the committee include: David B. Lee, chief sanitary engineer for the Florida State Board of Health; A. P. Black, professor of chemistry, University of Florida and vice president of the American Water Works Association; Wylie W. Gillespie, Jacksonville consulting engineer; Robert Hoy, representing the Florida Sewage Works Association.

## Mexican C. E.'s to hold international congress

Invitations are going out for the first international civil engineering congress, to be held in Mexico, April 30 to May 7, 1949. It is organized by the Society of Professional Civil Engineers of Mexico under the auspices of President Aleman of Mexico, and sponsored by the National University, the National Politechnic Institute and the Association of Engineers and Architects of Mexico.

In July, 1949, the summer meeting of the American Society of Civil Engineers also is scheduled to take place in Mexico City.

## Contracts let for 56 mi. of John Hart Highway

The British Columbia government has given the green light for resumption of work on the John Hart Highway into the Peace River district, following bogging down of the project because of a previous contractor's financial troubles.

Two contracts, covering 56 mi. of construction on the southern section of the highway have been awarded to W. C. Arnett & Co. of Vancouver.

A whole year's work was lost on the highway between Prince George and Azouzetta Lake on the summit of Pine Pass when Campbell Construction Co. of Vancouver was unable to carry out its agreement and the government was forced to cancel the contract.

Cost to the government will be $2,223,696. The Arnett company was low bidder on both new contracts. For the 30-mi. stretch between Mile 14 and Mile 44 in the Summit Lake area the firm bid $776,865, and for the other portion between Mile 68 and Mile 94, the bid was $1,446,831. An intervening 24-mi. section has yet to be bid on.

As a result of financial difficulties besetting the 251-mi. highway project to link Prince George in B.C. with the Peace River, it is estimated officially total cost will run between $10,000,000 and $12,000,000 instead of the $6,000,000 originally estimated.

Contractors were given 30 percent upward scale in prices in a general revision allowed by a Supreme Court judge last year.

# MEN AND JOBS

**Howard Von Gunten** has been appointed superintendent of parks for Fort Wayne, Ind. He succeeds the late Adolph Jaenicke. He has had full charge of park maintenance for three years. Formerly he was a foreman with Indiana Engineering & Construction Co.

Ford, Bacon & Davis, engineering-constructors, with offices in New York, Chicago, Philadelphia and Los Angeles, have announced that **Edgar G. Hill,** for many years a vice-president and director, has retired from active service with the firm but will continue as a consultant.

**Victor Gutnup,** engineer who had charge of building an overseas aerial cable line for unloading pipe and other supplies from ships offshore Saudi Arabia for construction of an oil pipeline, will supervise construction of an aerial tramway on Mount Hood, Ore.

**Joseph J. Rosa** formerly associated with Robert & Co., Inc., architects-engineers of Atlanta, Ga., as their chief civil engineer on Guam has joined the Knappen Tippetts Abbett Engineering Co. of New York as resident engineer on the New Brunswick, N. J., laboratory.

**C. M. Neidelman** has moved from San Francisco, where he was project engineer in the regional office of the Public Housing Administration, to Pearl Harbor to assume his new post as a civil engineer in the civilian staff of the U. S. Navy Air Force there.

**John A. Giles,** city engineer of Binghamton, N. Y., will be awarded the Veteran's Award of the American Public Works Association in recognition of "accomplishments and loyalty in the public works field" for 30 years service to one city. He has served Binghamton for 33 years, beginning as city engineer in 1908. From 1916 to 1919 he served as public works commissioner, then left for four years of partnership in a private engineering firm. He served as mayor of the city in 1924 and 1925, then returned to private engineering work. In 1932 he again was named city engineer, the position he still holds.

**Emerson Beauchamp** has been appointed rural highway commissioner in Kentucky.

**J. T. Patrick** of Durham, N. C., has been named coordinator for the Construction Apprentice Council for the Durham-Raleigh-Goldsboro area which will set up an apprentice training school in Durham in an attempt to reduce building costs by training young workers for the construction trades. The council is composed of contractors, architects and building supply dealers.

**H. G. Gray, Sr.,** resident engineer with the North Carolina Highway Department, has resigned to go with the Public Roads Administration in Washington, D. C., and has been succeeded by **Paul DuPre,** formerly division office engineer. **Joe Weaver** has been appointed to succeed DuPre.

**H. H. Smith,** structural engineer, of Seattle, Wash., has joined with architects Ralph E. Decker and Walter B. Christenson to form Decker, Christenson & Smith, architects and engineers.

**Charles P. Hoover,** chief chemist of the Columbus, Ohio, waterworks system, has been named consultant for a survey on controlling the hardness of the Toledo water supply. Toledo now spends about $15,000 a year to clean out clogged lines in the city system, in addition to the amount spent by individual citizens.

**Seated on a welded section of 24-in. steel pipe force main for the new sanitary sewage collector system of the Gary Steel Works Division of Carnegie-Illinois Steel Corp., in Gary, Ind., are Howard Kelso, field engineer (left), and H. E. Smith, superintendent for the contractor, F. H. McGraw & Co., Chicago.**

**Bernie Werner, associate engineer of the Baltimore, Md., Bureau of Water Supply, as he appears on arrival at his field office of the Liberty Road-Montebello tunnel job. His "band-box" appearance undergoes a transformation as he makes his daily inspection of underground construction on the 7-mi. hardrock tunnel being driven by Samuel R. Rosoff, Ltd.**

**Pictured above are members of the Portland Cement Association's first technical personnel training course, who have studied, in laboratory, field and lecture room, the everyday problems encountered in all phases of concrete construction. Six of them are service engineers employed by cement companies. The others are Portland Cement Association employes, principally field engineers attached to various district offices. The men are: front row (left to right): Lee R. Hill, Horace B. Parks, Joseph C. Braden, A. J. McElrath, George Kugar, E. F. J. Clark, Dave A. Dorward, R. W. Goggans, F. S. Long. Back row (left to right): C. C. Boyd, John A. Ruhling (in charge of school), D. L. Houghton, J. Y. Sertell, R. E. Knarr, John F. Lloyd and L. S. Mackay.**

## OBITUARY

**Hiram F. Post,** 70, retired engineer, graduate of the civil engineering department, University of Illinois, in 1902, died Nov. 24, in Larchmont, N. Y., where he had resided for the last 22 years.

**Lorne A. Scott,** Ipswich, Mass., president of the L. A. Scott Co., New York, engineers and builders, died Nov. 24. He was graduated from Harvard in 1904, and retired from active work with his company in 1946.

**Charles C. Brown,** 92, civil, sanitary and municipal engineer, and editor of "Municipal Engineering," 1896-1917, died at Lakeland, Fla., Nov. 26. He was a graduate of the University of Michigan, 1879, professor of civil engineering at Rose Polytechnic Institute, 1885-6, and in charge of the civil engineering department of Union College, 1886-93. He was consulting engineer for the N. Y. State Board of Health, 1887-93, and later was city engineer of Indianapolis, Ind., and of St. Petersburg and Lakeland, Fla.

**Henry W. Young,** 56, of Tuckahoe, N. Y., former highway commissioner of Eastchester, N. Y., and associated with the Westchester County, N. Y., Public Works Department, died Nov. 23.

**E. A. Burrows,** 67, consulting engineer, died at Washington, D. C., Nov. 30. He was a civil engineer graduate of Cornell University.

**Richard E. Meade,** 58, for many years a civil engineer with the Virginia highway department, died Dec. 3 in Richmond.

**Col. Henry T. Bowlby,** 69, died recently in Chicago. He attended West Point and took his civil engineering degree at the University of Nebraska in 1905. He was in railroad engineering location and construction on the Guyaquil and Quito Ry., 1901-4. He was on the faculty of the University of Washington, 1905-9, and in 1913-15 was state highway engineer of Oregon. In World War I, Colonel Bowlby returned to the Army where he served as lieutenant colonel in France as well as in the recruiting of troops in the United States. After World War I, he served with the U. S. Bureau of Public Roads; as chief engineer of the Long Island State Park Commission, New York; and later as a consulting engineer.

**C. T. Ekman,** 61, director of the division of water resources and engineering, Minnesota Conservation Department, died in Minneapolis, Dec. 4. A graduate of the civil engineering department of the University of Minnesota, Mr. Ekman joined the division as a design engineer in 1936 and became director in 1947.

**A. L. Darrow,** 63, civil engineer, Watervliet, N. Y., died there Nov. 29. In the war Mr. Darrow, while on an engineering job for the Army, lost both legs.

**John M. Malloy,** 69, for 35 years engineer of Scott County, Iowa, died recently in Davenport, Iowa.

## *Arkansas engineers seek better salary rates*

Because members of the Arkansas Society of Professional Engineers believe that the present low maximum salaries for engineers in that state make it difficult to obtain qualified personnel, the society has approved a proposed minimum wage scale for state-employed engineers, be submitted to the Arkansas Legislative Council, an advisory agency to the Arkansas legislature.

The suggested scale is: Chief engineer, large organizations, $8,500 and up; chief engineer, small organization, $7,250 to $8,500; principal engineer, $6,000 to $7,250; senior engineer, $5,000 to $6,000; engineer, $4,200 to $5,000; assistant engineer, $3,300 to $4,200; senior engineer aide, $2,700 to $3,300; junior engineer aide, $1,800 to $2,700.

The plan was submitted by a special committee composed of Fred Herring, chairman, N. B. Garver and E. L. Wales.

The society also will urge passage of laws or adoption of its proposed regulations to provide:

Salaries at a level comparable to that paid by the federal government, industry and several states.

Tenure of position free from political influence.

Provision for annual and sick leave.

An equitable retirement system for classified personnel and social security for the unclassified.

A rating system whereby personnel are employed and promoted solely on a basis of education, specialized knowledge, skills, abilities and aptitudes.

A definite departmental training program.

# AFL wants dispute settlement limits

The AFL Building and Construction Trades Department will propose changes in the existing plan for settling jurisdictional disputes with the view toward limiting use of the plan by contractors.

This was decided at the 41st annual convention of the building trades unions held recently in Cincinnati. In effect since May 1 (ENR April 15, vol. p. 541), the plan involves a joint board of contractors and labor officials, whose decisions on jurisdictional matters are binding on disputants. Seven specialty contractors and the Associated General Contractors were the original employer-participants in the program.

The suggestion was made in a resolution offered by the executive council and approved by the convention. The resolution stated that employers were "submitting an excessive number of cases for decision" although many of them could have been adjusted by agreements at the local level.

In his report to the convention, President Richard J. Gray said 52 cases had been submitted to the joint board under the plan, but he did not say how many had been filed by contractors or by unions. At the time his report was prepared, six boards had been established, hearings were held by four of them, and three awards had been made.

The resolution calls for a meeting of the presidents of the 19 building trades unions, after conferences have been held with the contractors' representatives, for the purpose of accepting or rejecting the changed plan.

Attorneys advised the convention delegates that it will not be an easy task to repeal or drastically revise the Taft-Hartley Law. Louis Sherman, counsel for the International Brotherhood of Electrical Workers, warned that when a new law is being considered by Congress "we're going to have to explain why this law is bad."

The delegates were told by Clif Langsdale, attorney for the Building Trades Council in Kansas City, that the building trades unions cannot live without the closed shop.

Resolutions were adopted urging Congress to:

Restore authority, recently expired, to the Federal Works Administrator to advance funds to non-Federal public agencies for planning public works projects.

Appropriate funds, under a law passed last June, for making loans to state and local agencies for the construction of necessary treatment works to aid in alleviating stream pollution.

# NEW PRODUCTS

***Durisol for roofing . . .***

Durisol, a lightweight precast concrete building unit, has been introduced to the United States after several years of production and use in Switzerland and other European countries.

Now being manufactured in limited quantities at Aberdeen, Md., the material, which is made of mineralized wood fiber and portland cement, will shortly be produced on a larger scale in a new plant at Beacon, N. Y.

An experimental building, a five-car garage in New Canaan, Conn., was the first Durisol structure in this country.

The $3,600 cost of this 9,000-cu.ft. building represented a saving over the estimated cost of $5,000 for erection of the same building with conventional materials. Durisol panels were placed between studs spaced 4 ft. apart instead of the usual 2-ft. interval, netting a substantial saving in lumber. No mortar was needed. Slabs were held in place by outside battens nailed to the studs and overlapping the slabs about ¾ in.

The garage, constructed in the fall of 1947, has withstood various load and temperature tests. Since this first application. Durisol has been successfully applied to house and industrial construction.

The product is said to be immune to attack by mold, fungus, rats or termites and is unaffected by moisture. It may be installed in direct contact with metal structures. Durisol can be cut with a saw when non-modular units are required. It is easily fastened in place with nails, screws, clips or mortar. It is an excellent plaster ground.

Modular building units are available for a wide variety of uses including

*. . . and for siding*

sheathing, partitions, ceilings, subflooring and roof slabs. DURISOL, INC., 420 LEXINGTON AVE., NEW YORK CITY.

### *Steel Hardening Compound*

Deep penetration of cutting tools, dies, taps and reamers is possible with a new steel hardening compound called "Hi-Speed-It", which contains no cyanide and is non-poisonous. Ordinary wire nails and common reinforcing rods can be hardened to such a degree that they can be driven through cold steel plate. Low carbon steel can be fashioned into a chisel, hardened, and then used to cut spring steel or stainless steel. Because of these unusual qualities, it is believed the product may be useful for such purposes as hardening edges of picks and shovels. — NEW AMP METALLURGICAL LABORATORIES, 1 MERCER ST., NEW YORK 13, N. Y.

### *Welded Rivet Stud*

Volume production has been started on a new type of composite aluminum and mild steel "Rivweld" rivet stud, which overcomes the corrosion problem usually encountered when aluminum roofing and siding have been secured with steel-plated fasteners. The new stud consists of a mild steel female stud in which a cross-shaped aluminum insert has been fitted so as to prevent the collection of moisture.

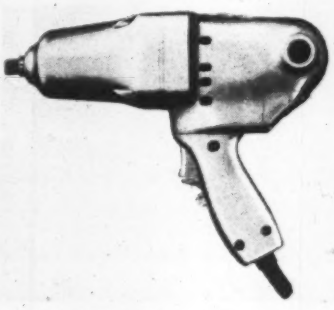
With mild steel in the flux-filled end of the stud, which is secured to steel purlins, struts or girts, and aluminum in the upper portions of the stud which come in contact with the aluminum sheet, there is no opportunity for electrolytic action at any point.

The Rivweld rivet studs are end-welded to structural supports with the light-weight automatic Nelson stud welding gun, after which the corrugated metal sheets are merely laid in position and impaled over the rivet end of the studs with a rubber hammer. Final operation consists of upsetting the aluminum rivet. A new aluminum-surfaced neoprene washer has also been developed for use in conjunction with the composite stud.—NELSON STUD WELDING DIVISION OF MORTON-GREGORY CORP., LORAIN, OHIO.

### *Packaged Buildings*

Packaged, insulated, steel-framed buildings are now available. The insulation is made an integral part of the structure by combining packaged steel framing with Celotex Cemesto structural insulation panels equal in insulation value to a common brick wall 18 in. thick. A wide variety of sizes and combinations of windows and doors gives the user adaptability previously associated only with custom-built structures. Because the buildings are mass-produced, their cost per square foot is low considering performance and appearance. All component parts—steel framing and Cemesto panels—are accurately cut to size so that the building can be assembled in much less time than is required to erect a conventional structure of the same size. All parts

are numbered, making the job of assembly so simple that skilled labor is unnecessary. The sturdy framework is made of alloy-steel formed in angles and channels, precision engineered for strength and simplicity. The patented design keeps the contraction and expansion rate so low that the building will stay weather-tight during all seasons.—THE CELOTEX CORP., 120 S. LA SALLE ST., CHICAGO 3, ILL.



### *Impact Wrench*

A new impact wrench will quickly tighten or remove either left or right-handed nuts, bolts, and cap screws. It rapidly spins a free running nut or bolt to a seating position with high speed, direct-drive action—then within a matter of seconds a rapid, rotary hammering action drives the nut or bolt to maximum tightness. In removing a fastener the hammering action loosens the nut or bolt, and the direct-drive rapidly spins it free. A reversing switch allows the unit to be used for either driving or removing fasteners. The switch is mounted on the lower side of the housing where it is protected from accidental contact. The wrench is made of streamlined aluminum castings and has a powerful B&D universal motor.—THE BLACK & DECKER MFG. CO., TOWSON 4, MD.

### *Bottom-Dump Wagon*

For off-highway haulage, new Euclid on 24x25 tires has an improved hopper design which places more pay-load weight on drive tires and provides good traction. Other features of bottom-dump unit include new form-fitting seat and air booster steering which give added driver comfort and reduce driver fatigue. Wagon has struck capacity of 13 cu. yd. and a pay-load capacity of 40,000 lb. Steep hopper sides shed sticky materials fast and clean. This machine is designed for quick loading by power shovels, draglines, conveyors and other equipment. Powered by General Motors diesel engine of 190 brake hp. at 1800 rpm, or Cummins diesel of 200 brake hp. at 2100 rpm.—EUCLID ROAD MACHINERY CO., CLEVELAND 17, OHIO.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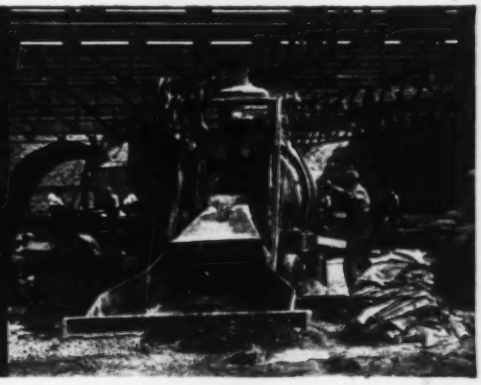

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